



# QUICKSILVER TECHNOLOGY

## INVENTION DISCLOSURE

# EXHIBIT A

TITLE OF INVENTION (short title and description)		Date Submitted:
Title: [Predictive Resource Allocation] — Label M		
Description: — Label E		— Label A
The [control program responsible for directing data flow through one, or more, detached processors] is given a description of what those detached processors will need to execute or resources they will need to assign (e.g., memory) ahead of the actual execution of the programs] executing on those processors. [Hence the control program can take action on preparing those programs or resources ahead of the time they are actually needed.] [The description is furnished in terms of a script of the items and the point at which they will be needed and by whom.] — Label F		
INVENTOR INFORMATION — Label B		
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### SOLUTION

The proposed solution is to [provide the controlling program (or central Operating System dispatcher/scheduler)] [a description of the execution sequence of the program which also includes a list of resources, when they are required and when they can be released.] Hence the controlling program is aware of the application flow sequence and the resource requirements *ahead of the actual execution of the application*. Thus the controlling program is able to assign the resources ahead of need and release them for other use when no longer required. [The list, or description, of resource requirements is provided to the controlling program at the start of execution. This list is referred to as a "script" (i.e., the accepted term for a task description interpreted by a program at execution of that program.)]

Example:

An application running in [a multiprocessor environment executes function X on processor Q and function Y or processor R, then Z on Q.] However, Z cannot execute until Y is complete. Function X requires a 100 Kbyte buffer, Z requires a 200 Kbyte buffer. X can surrender its 100 Kbyte buffer, but only when Y is done (allowing the control program to reuse the space for Z's 200 Kbyte buffer). The script might appear as follows –

PROCESS X EXECUTES ON Q; [NEEDS: BUFFER 100K REF BB] ——— Label K

PROCESS Y EXECUTES ON R

PROCESS Z EXECUTES ON Q WAIT FOR Y; NEEDS: BUFFER 200K; FREE BB

[Hence the controlling processor has a road map of exactly what will happen in the program prior to actual execution and can decide how to optimize memory allocation far in advance of need. (The actual execution of the application program will cause the request for execution of X, Y and Z as well as their requests for their buffers.)] [The important feature of this invention is that the controlling processor knows the execution sequence and requirements well ahead of time and can therefore optimize the resource allocation.] Thus resource assignment is predictive (ahead of time) rather than reactive (at time of need).]



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#### CRITICAL DATES INFORMATION

Date invention workable: Immediate

Used or Planned for product ☐ Yes ☒ No

Product name: \_\_\_\_\_

Release date: \_\_\_\_\_

Announce date: \_\_\_\_\_

Public Demonstration ☐ Yes ☒ No

Demo date: \_\_\_\_\_

Location: \_\_\_\_\_

Disclosed outside of QST ☐ Yes ☒ No

Disclosure date: \_\_\_\_\_

Location: \_\_\_\_\_

Used in Manufacturing ☐ Yes ☒ No

Manufacture date: \_\_\_\_\_

Location: \_\_\_\_\_

Product: \_\_\_\_\_

Other (Please specify)



## QUICKSILVER TECHNOLOGY

### INVENTION DISCLOSURE

#### DESCRIPTION OF INVENTION:

Describe the reason for the invention (Problem) and describe the invention and how it resolves the problem (Solution). Attach a **DIAGRAM** of the invention.

#### PROBLEM

Problem addressed is:

- a. How to assign memory and other processor resources in advance of their actual use?
- b. How to coordinate the assignment of the memory or other resources with the program execution such that assignment and need are synchronized (i.e., assignment takes place ahead of need in a dynamically changing assignment application)?

Example –

A processor X needs a memory buffer of 100,000 bytes before executing program segment, or function, Q. The memory buffer is only needed at that time and *not before nor after*. Assigning the 100,000 bytes prior to execution is wasteful because it is only needed for Q; this would tie up the 100,000 bytes for the entire execution of the program.



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#### EVALUATION QUESTIONS

If this problem has been solved before, how was it solved?

Not aware that the problem has been solved in a dynamic environment, especially not in a multiprocessor context.

Why is your solution better?

It enables resources (e.g., memory, coprocessors) to be assigned ahead of need and the assignment to be coordinated with the needs of other program functions.

Who outside of QST (competitors) would want to use your solution?

Any competitor designing a multiprocessor system for maximum performance.

How would QST discover that competitors were using your solution?

Research.

Please list and provide any and all documentation or Prior Art related to this invention:

Have not researched Prior Art.

### NEW MATTER FORM (NON-LITIGATION)

**INSTRUCTIONS:** This form will open a new matter record in all TTC Databases and will generate a corresponding file folder. Please attach a *New Client Form (Non-Litigation)*, if the client does not currently exist. Please attach a *New Matter Form (Non-Litigation)*, for each additional matter required. The completed form(s) should be sent to the Records Department, attn: Client Information. Please also attach a Conflicts Memo, all responses, and an indication of how any conflict concerns were resolved.

#### CLIENT INFORMATION

Client No: 021202 (if a current client)	Client Name: Quicksilver Technology
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#### NEW MATTER INFORMATION

New Matter No: (Records Dept. use only)	Please complete the new matter number below <b>only</b> if you are requesting a new "sub-matter" for an existing matter _____		
Matter Name: Predictive Resource Allocation			
Short Matter Name: (30 char – used for DTE) Predictive Resource Allocation			
Client's Reference No: QST-026US		Office: <input checked="" type="checkbox"/> SF <input type="checkbox"/> PA <input type="checkbox"/> SE <input type="checkbox"/> DE <input type="checkbox"/> WC	
Law Type: (see complete list below) 021		Target Filing Date : ??	
<b>Conflict Check Required for the following Law Types</b>			
028	Patent Investigation/Validity/Infringement Studies	040	Trademark Investigation/Validity/Infringement Studies
037	Contracts	041	Copyright Investigation/Validity/Infringement Studies
038	Licensing	042	Arbitration/E.N.E/Expert witness
<b>Conflict Check required for the following Law Types if Adverse Party suspected</b>			
025	U.S. Patent, Re-Issue	039	Opinions and Advice
026	U.S. Patent, Re-Examination*		

#### ATTORNEY INFORMATION

Responsible Atty Code:	Responsible Atty Name: Charles Kulas
Working Atty 1 Code: 0397	Working Atty 1 Name: Fidel Nwamu
Working Atty 2 Code:	Working Atty 2 Name:

#### SURCHARGE INFORMATION (ELECTRICAL MATTERS ONLY)

For: (check one) <input type="checkbox"/> Rush Application <input type="checkbox"/> Prospectus Opinion <input type="checkbox"/> Other _____	Surcharge Percentage of Hourly Billing: <input type="checkbox"/> 25% for rushes of 3 months to bar date. <input type="checkbox"/> 50% for rushes of 1½ months to bar date. <input type="checkbox"/> 25% for prospectus opinion (plus \$5,000 fixed fee).
Surcharge applies to billings through ____ / ____ (Month/Year)	

#### MATTER BILLING INFORMATION

Matter Billing Address: (if different from client billing address) Attn:	Notes:
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#### RECORDS INFORMATION

Indicate type of Folder required if different from standard <input checked="" type="checkbox"/> Three-Fold Patent <input type="checkbox"/> Two-Fold Foreign Patent <input type="checkbox"/> Holding File <input type="checkbox"/> Brown Multi-divided <input type="checkbox"/> Two-fold Manila <input type="checkbox"/> Two-fold Green <input type="checkbox"/> Flip-top Pleading
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Prepared By: Alison Bowden	Preparer's Extension: 4099	Date:
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## NEW MATTER FORM (NON-LITIGATIVE)

## INVENTOR INFORMATION

(use additional pages if more than four Inventors and attach to primary form)

Inventor 1		Inventor 2	
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Citizenship:	USA	Citizenship:	

### CONFLICT INFORMATION

(a conflicts check should be obtained before additions or changes are made to related parties)

[illegible]

## NOTES

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Prepared By: Alison Bowden	Preparer's Extension: 4099	Date:
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